

(19) Japanese Patent Office (JP)

(12) Unexamined
Laid-open Patent
Application (A)(11) Laid-open Patent Application No.
Kokai No. 2003-144444

(P2003-144444A)

(43) Disclosure Date May 20, 2003

(51) Int. Cl.⁷

A 6 1 B

17/12

1/00

Identification Symbol

3 2 0

3 3 4

F I

A 6 1 B

17/12

1/00

Theme Code (Reference)

3 2 0 4 C 0 6 0

3 3 4 D 4 C 0 6 1

Examination Request None No. of Claims 3 OL (Total 5 pages)

(21) Application No. Tokkai2001-346965
(P2001-346965)

(22) Filing Date November 13, 2001

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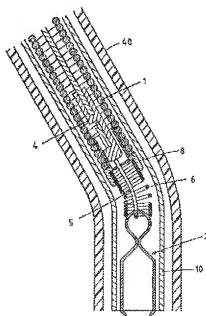
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MITSUI Kazuhiko, Patent Atty.F Themes (Reference) 4C060 DD03 DD19 DD29 MM24
4C061 GG15 JJ06 JJ11

(54) [Invention Title] Endoscopic clip device

(57) [Abstract]

[Problem] To provide an endoscopic clip device that is able to shorten the length of a rigid part of a tip portion, and can be passed smoothly and without damage, even if the treatment accessory insertion channel of the endoscope is bent at a small curvature radius.

[Solution] An endoscopic clip device is constituted with a clip closure ring 6 disposed adjacent to the rear of a clip 2, and detachably linked to the tip of a flexible sheath 1, so that the clip 2, after being opened and closed, is held in a closed state by being withdrawn into the clip closure ring 6, wherein the clip closure ring 6 is formed of a bendable cylindrical body.



[Scope of the Patent Claims]

[Claim 1] An endoscopic clip device is constituted with a clip closure ring disposed adjacent to the rear of a clip, and detachably linked to the tip of a flexible sheath, so that the aforementioned clip, after being opened and closed, is held in a closed state by being withdrawn into the aforementioned clip closure ring, wherein said endoscopic clip device is characterized in that said clip closure ring is formed of a bendable cylindrical body.

[Claim 2] The endoscopic clip device disclosed in Claim 1, wherein said clip closure ring is formed of a coil pipe, in which a metal wire is wound at a regular diameter.

[Claim 3] The endoscopic clip device disclosed in Claim 1, wherein said clip closure ring is formed of an elastic rubber member.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention] The present invention pertains to an endoscopic clip device used via the treatment accessory channel of an endoscope, and used for hemostasis, suturing, and marking, etc., inside the body.

[0002]

[Prior Art] Endoscopic clip devices are commonly constituted with a clip closure ring disposed adjacent to the rear of the clip being detachably linked to the tip of a flexible sheath, so that the clip, after having been opened and closed through being withdrawn into the clip closure ring is held in a closed state, and then left inside the body together with the clip closure ring.

[0003]

[Problem solved by the invention] Because endoscopic clip devices, as described above, are constructed with the clip and clip closure ring arranged aligned in a straight line, the length of the rigid parts at the tip portion of the flexible sheath becomes very long.

[0004] Therefore, there have been cases, in states when the treatment accessory insertion channel of the endoscope is bent at a small curvature radius, the tip portion of the endoscopic clip device gets caught there and cannot be released, causing damage.

[0005] Therefore, the objective of present invention is to provide an endoscopic clip device that is able to shorten the length of a rigid part of a tip portion, and can be passed through smoothly and without damage, even if the treatment accessory insertion channel of the endoscope is bent at a small curvature radius.

[0006]

[Means of solving problem] In order to achieve the above objective, the endoscopic clip device of the present invention is constituted with a clip closure ring disposed adjacent to the rear of a clip and detachably linked to the tip of a flexible sheath, so that the clip, after having been opened and closed, is held in a closed state by being withdrawn into the clip closure ring, wherein the clip closure ring is formed of a bendable cylindrical body.

[0007] Furthermore, the clip closure ring may also be formed of a coil pipe, in which a metal wire is wound at a regular diameter, or it may be formed of an elastic rubber member.

[0008]

[Embodiment of the Invention] An example embodiment of the present invention will be described, referring to the attached drawings. Figure 2 shows the overall structure of an endoscopic clip device, wherein a clip 2 is mounted to the tip of a flexible sheath 1, e.g., in the form of a coil pipe, in which stainless steel wire is tightly wound at a regular diameter.

[0009] An operating wire 3, the tip of which is linked to the clip 2, is disposed inserted into the sheath 1 so that it can be freely extended and retracted in the axial direction, and a flexible mantle tube 10, made from, e.g., a polytetrafluoroethylene resin tube or superelastic alloy tube, is loosely fitted onto the outer surface of the sheath 1 so that it can be freely extended and retracted in the axial direction.

[0010] In Figure 2, the rear base portion of the clip 2 is accommodated inside the tip of the mantle tube 10, so that a pair of arms 2a and claws 2b, which are formed protruding inward at the respective tips thereof, can be seen in the open state.

[0011] A control unit 20 connected to the base of the sheath 1 is constituted with a finger loop 23a mounted on the end of the control unit body 23 opposite from the end connected to the base of the sheath 1, and with a slider 22, to which the anchor end of the operating wire 3 is connected, mounted to the control unit body 23 so that it can freely slide in the axial direction.

[0012] Figure 3 shows a magnification of the tip portion of the endoscopic clip device, wherein the clip 2, in its natural state when no external force is being exerted (namely, when the pair of arms 2a are in a parallel state), is covered by the top portion of the mantle tube 10.

[0013] This clip 2 is formed of a plate member, e.g., spring stainless steel plate, etc., with the base end of the pair of arms 2a, which are parallel in the natural state, linked by base link 2c, which is formed into a nearly 360° ring, and with claws 2b formed protruding bending inward from the tip portion of each arm 2a.

[0014] The clip 2 is formed by bending a single plate member so that it does not cross over itself along its length, and the interface 2t between the base link 2c and the pair of arms 2a are bent into a shape in which the outsides of the plate member protrude inward toward and constrict one another, with the apexes of these protrusions contacting each other.

[0015] A clip linking rack 4, which can be attached and detached to and from a clip linking wire 5 extending rearward from the clip 2, is mounted to the tip of the operating wire 3, which is disposed at the axis of the sheath 1 so that it can be freely extended and retracted.

[0016] The operating wire 3 is securely fastened to the rear half of the clip linking rack 4 by, e.g., soldering, etc.,

and an indentation 4a is formed recessed into the side surface of the tip half thereof so that the annular clip linking wire 5 can be disengaged. The clip linking wire 5 is formed into an annular shape with the two ends of a single wire bound together.

[0017] A clip closure ring 6 for deforming the base link 2c of the clip 2 is detachably fitted into the tipward portion of a cylindrical ring bearing member 8, which is affixed to the tip of the sheath 1.

[0018] The clip closure ring 6 of this embodiment is formed of a coil pipe, in which a metal wire is wound at a regular diameter, and the base link 2c of the clip 2 is flattened by being withdrawn into the clip closure ring 6, deforming it from a roughly round shape to an elliptical shape.

[0019] The endoscopic clip device constituted in the way is passed into the treatment appliance insertion channel of the endoscope in the state shown in Figure 3, and passes through the bent portion of the treatment appliance insertion channel 40, as shown in Figure 1.

[0020] When this occurs, the clip closure ring 6 bends, together with the clip linking wire 5 and mantle tube 10, in the bent portion of the treatment appliance insertion channel 40.

[0021] Since the only rigid, inflexible tip part in the tip portion of the endoscopic clip device is thus the clip 2 part, it is able to pass through smoothly without catching, even when the treatment appliance insertion channel 40 has been bent at a considerably small curvature radius.

[0022] Once the tip of the endoscopic clip device has been protruded into the body from the tip of the treatment appliance insertion channel 40 of the endoscope, the mantle tube 10 is slightly drawn back toward the control unit 20 and the clip 2 extends forward from the tip of the mantle tube 10 as shown in Figure 4, and then the operating wire 3 is pulled toward the control unit 20.

[0023] When this is done, the base link 2c of the clip 2 is withdrawn into the clip closure ring 6 and deformed from a circular to an elliptical shape, whereby the pair of arms 2a is changed to an open state.

[0024] When the affected part 100 that is the object of clipping is positioned between the pair of arms 2a in this state, and then the operating wire 3 is pulled further toward the control unit 20, the pair of arms 2a of the clip 2 are pressed from the rear in the tip portion of the clip closure ring 6, as shown in Figure 5, whereby the pair of arms 2a are put in a parallel and closed state, wherein the claws 2b are driven into the mucosa of the affected part 100.

[0025] Since the linkage between the clip linking wire 5 and clip linking rack 4 is loosened at this point by pulling back the sheath 1 while slightly pressing the operating wire 3 forward, if the tip portion of the sheath 1 is suitably moved to the left and right, the clip 2 is separated from the sheath and left in place in a state in which it is closed by the clip closure ring 6 biting into the mucosa of the affected part 100, as shown in Figure 6.

[0026] Furthermore, the present invention is not limited to the above embodiment, and, e.g., a cylinder made from elastic rubber material, or the like, may also be used as the clip closure ring 6, as shown in Figure 7.

[0027] In addition, the number of arms 2a on the clip 2 may also be 3 or more, and the operating wire 3 and clip may be linked by some member other than a wire.

[0028]

[Effect of the Invention] By forming a clip closure ring, which is detachably linked to the tip of a flexible sheath adjacent to the rear of the clip, of a bendable cylinder, the endoscopic clip device of the present invention is able to shorten the length of the rigid part of the tip portion, so that it can smoothly pass through without damage, even when the treatment accessory insertion channel of the endoscope is bent at a small curvature radius.

[Brief Explanation of the Figures]

[Figure 1] This is a side elevation cross-sectional drawing of a state in which the tip portion of the endoscopic clip device of a first embodiment of the present invention is passed through the treatment accessory insertion channel of an endoscope.

[Figure 2] This is a contour drawing that shows the overall structure of the endoscopic clip device of a first embodiment of the present invention.

[Figure 3] This is a side elevation cross-sectional drawing of the tip portion of the endoscopic clip device of a first embodiment of the present invention.

[Figure 4] This is a side elevation cross-sectional drawing of the open state in the clip opening/closing operation of the endoscopic clip device of a first embodiment of the present invention.

[Figure 5] This is a side elevation cross-sectional drawing of the closed state in the clip opening/closing operation of the endoscopic clip device of a first embodiment of the present invention.

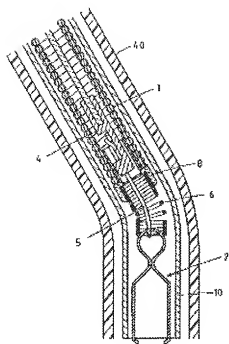
[Figure 6] This is a side elevation sectional drawing of the state in which the clip of the endoscopic clip device of a first embodiment of the present invention is left behind.

[Figure 7] This is a side elevation sectional drawing of the tip portion of the endoscopic clip device of a second embodiment of the present invention.

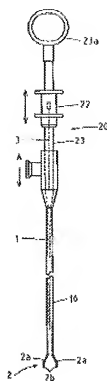
[Legend]

- 1 sheath
- 2 clip
- 2a arms
- 3 operating wire
- 4 clip linking rack
- 5 clip linking wire
- 6 clip closure ring
- 10 mantle tube
- 20 control unit

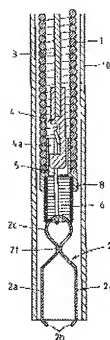
[Figure 1]



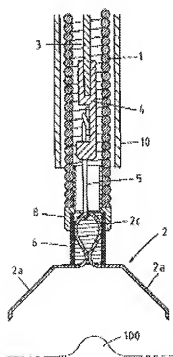
[Figure 2]



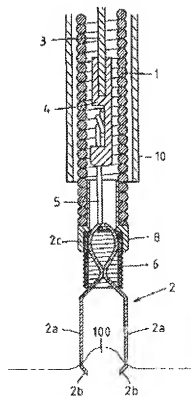
[Figure 3]



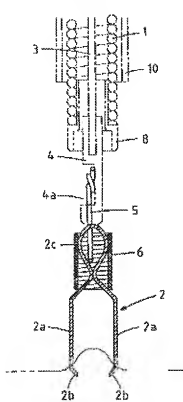
[Figure 4]



[Figure 5]



[Figure 6]



[Figure 7]

